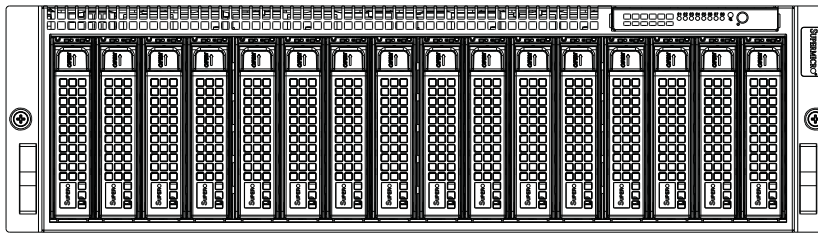
SUPERMICRO®

# SUPERSERVER

# MicroCloud
# 5037MC-H86RF



# USER'S MANUAL

Revision 1.0

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Manual Revision 1.0
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# Preface

## About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5037MC-H86RF. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 5037MC-H86RF is an 8-node, MicroCloud server system based on the SC938H-R1620B 3U chassis and eight X9SCD+-HF motherboards. The X9SCD+-HF supports single Intel® Xeon® E3-1200 v2 Series processors. Please refer to our web site for an up-to-date list of supported processors. With selected Add-On Card, the server supports both SAS and SATA drives.

## Manual Organization

**Chapter 1: Introduction**

The first chapter provides a checklist of the main components included with the system and describes the main features of the Super X9SCD+-HF motherboard and the SC938H-R1620B chassis.

**Chapter 2: Server Installation**

This chapter describes the steps necessary to install the server into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

**Chapter 3: System Interface**

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

**Chapter 4: System Safety**

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5037MC-H86RF.

**Chapter 5: Advanced Motherboard Setup**

Chapter 5 provides detailed information on the X9SCD+-HF motherboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

**Chapter 6: Advanced Chassis Setup**

Refer to Chapter 6 for detailed information on the SC938H-R1620B 3U server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring drives and when replacing system power supply units and cooling fans.

**Chapter 7: BIOS**

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

**Appendix A: BIOS POST Codes**

**Appendix B: System Specifications**

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# Notes

# Chapter 1

# Introduction

## 1-1 Overview

The SuperServer 5037MC-H86RF is an eight node, MicroCloud server system comprised of two main subsystems: the SC938H-R1620B 3U chassis and eight X9SCD+-HF motherboards. Please refer to our web site for information on operating systems that have been certified for use with the 5037MC-H86RF (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components have been included with the 5037MC-H86RF, as listed below:

- Four chassis fans (FAN-0133L4)
- One passive heatsink, each node (SNK-P0047PS+)
- Two air shrouds, each node (MCP-310-93801-0B, MCP-310-93802-0B)
- One riser card, each node (RSC-RR1U-E8)
- SAS/SATA Accessories
  One SAS/SATA backplane (BPN-SAS-938H)
  Sixteen hot-swap hard drive carriers (MCP-220-00094-0B)
- One rail kit (MCP-290-00053)
- One SuperServer 5037MC-H86RF User's Manual

**Note**: a complete list of safety warnings is provided on the Supermicro web site at http://www.supermicro.com/about/policies/safety_information.cfm

## 1-2 Motherboard Features

The 5037MC-H86RF includes a total of eight X9SCD+-HF single processor motherboards, which are based on the Intel C204 PCH chipset. Below are the main features of the X9SCD+-HF. (See Figure 1-1 for a block diagram of the chipset).

### Processors

Each X9SCD+-HF supports a single Intel E3-1200 v2 Series processor in an LGA 1155 socket. Please refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

### Memory

The X9SCD+-HF has four DIMM slots that can support up to 32 GB of ECC DDR3-1333/1600 UDIMM. This equates to a maximum of 256 GB for the system. Memory modules of the same size and speed should be used. See Chapter 5 for details.

### SAS/SATA

With the selected Add-On Card, SAS/SATA drives are supported. On the X9SCD+-HF, on-board SATA/SAS is not supported. SAS/SATA drives are only supported with the use of a HBA/RAID card and the use of the IPASS cable to provide the SAS/SATA signal to the front HDD backplane.

**Note:** The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SATA drives.

### Rear I/O Ports

The rear I/O panel includes one KVM connector, an IPMI port, a power LED, UID (Unit Identification) LED and buttons for UID and power.

### Graphics

There is no onboard graphics controller on the X9SCD+-HF. A VGA port is included on the KVM connector.

### IPMI

IPMI (Intelligent Platform Management Interface) is a hardware-level interface specification that provides remote access, monitoring and administration for Supermicro server platforms. IPMI allows server administrators to view a server's hardware

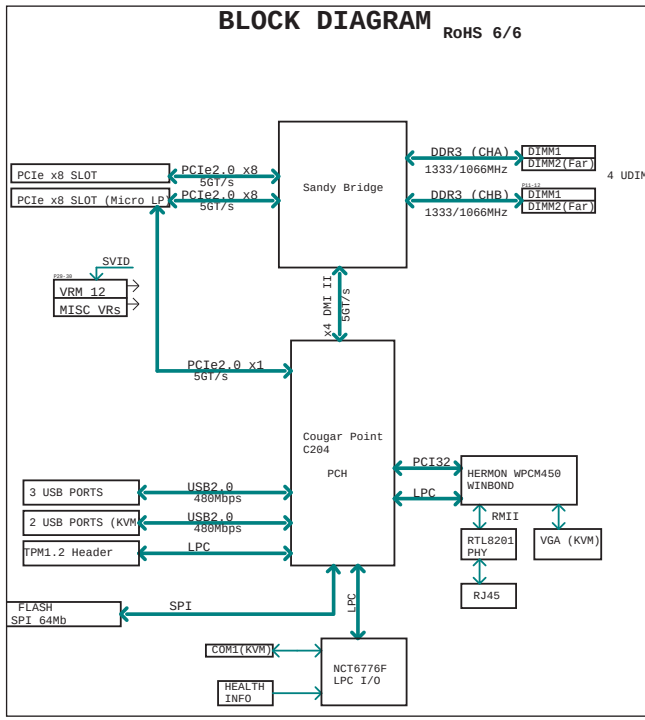
status remotely, receive an alarm automatically if a failure occurs, and power cycle a system that is non-responsive.

## Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

**Figure 1-1. Intel C204 PCH:**
**System Block Diagram**

**Note:** This is a general block diagram. See Chapter 5 for details.



## 1-3 Server Chassis Features

The following is a general outline of the main features of the SC938H-R1620B server chassis.

### System Power

The SC938H-R1620B features a redundant (two separate power modules) 1620W high-efficiency power supply. This power redundancy feature allows you to replace a failed power supply without shutting down the system.

### Front Control Panel

The control panel on the 5037MC-H86RF features a power button/LED, a power fail LED and eight LEDs to indicate the status of each node in the system.

### Cooling System

The SC938H-R1620B chassis includes four 8-cm fans located behind the back-plane. Each fan is associated with and controlled by two nodes. Each node also has an air shroud to channel the airflow from the system fans to efficiently cool the components that generate the most heat. See Chapter 6 for details.

## 1-4 Contacting Supermicro

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| Email: | support@supermicro.com.tw |
| Tel: | +886-(2)-8226-3990 |

## Notes

# Chapter 2

# Server Installation

## 2-1 Overview

This chapter provides a quick setup checklist to get your 5037MC-H86RF up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

## 2-2 Unpacking the System

You should inspect the box the 5037MC-H86RF was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the 5037MC-H86RF. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

## 2-3 Preparing for Setup

The 5037MC-H86RF may have come with hardware to mount the system into a server rack. If mounting to a rack with the rail kit, follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

### Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

## 2-4 Warnings and Precautions

### Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from it.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

### Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SATA drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

## Rack Mounting Considerations

### Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

### Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

### Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

### Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

### Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power , etc.).

**Warning!** To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

## 2-5 Installing the System into a Rack

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. **Note:** This rail will fit a rack between 26.5" and 36.4" deep.

### Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of three sections: An inner chassis rail that secures directly to the chassis, an outer rail that secures to the rack, and a middle rail, which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis.

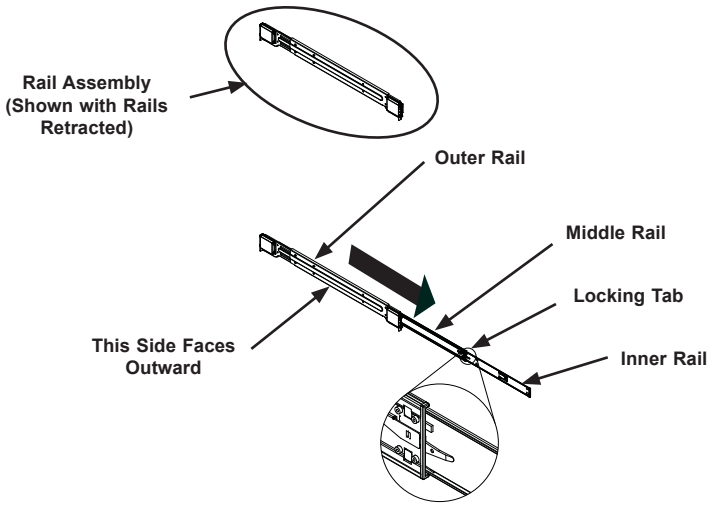



**Figure 2-1. Identifying the Outer, Middle and Inner Rails (Left Rail Assembly Shown)**

## Locking Tabs

Each inner rail has a locking tab. This tab locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack. This prevents the server from coming completely out of the rack when when the chassis is pulled out for servicing.

## Releasing the Inner Rail

***Releasing Inner Rail from the Outer Rails***

1. Identify the left and right outer rail assemblies as described on the previous page.
2. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
3. Press the locking tab down to release the inner rail.
4. Repeat steps 1-3 for the remaining outer rail.

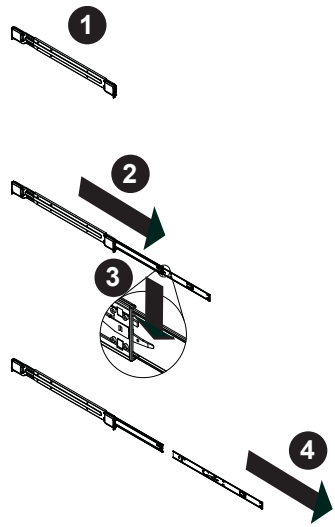



**Figure 2-2. Extending and Releasing the Inner Rail**

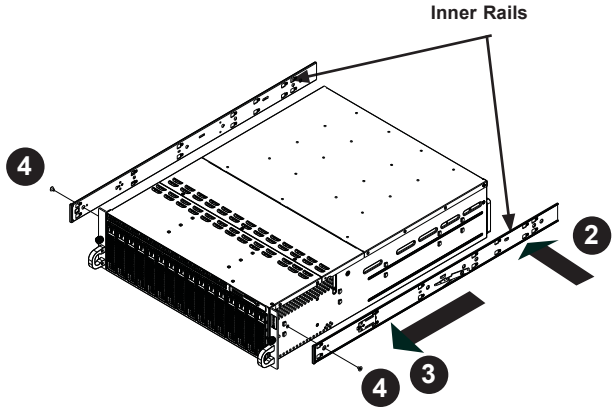



**Figure 2-3. Installing the Inner Rails**

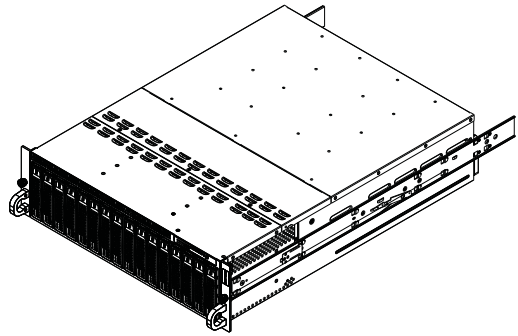


**Figure 2-4. Inner Rails Installed on the Chassis**

## Installing The Inner Rails on the Chassis

***Installing the Inner Rails***

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the rail clicks into the locked position, which secures the inner rail to the chassis.
4. Secure the inner rail to the chassis with the screws provided.
5. Repeat steps 1 through 4 above for the other inner rail.

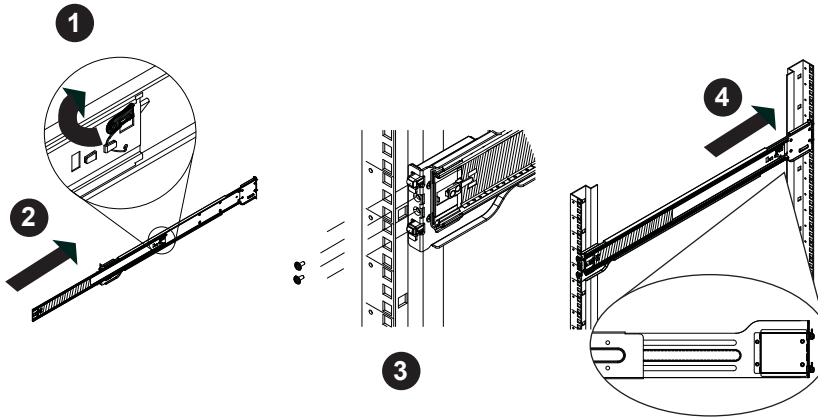



**Figure 2-5. Extending and Releasing the Outer Rails**

## Installing the Outer Rails on the Rack

***Installing the Outer Rails***

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.
4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.
5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat steps 1-5 for the remaining outer rail.

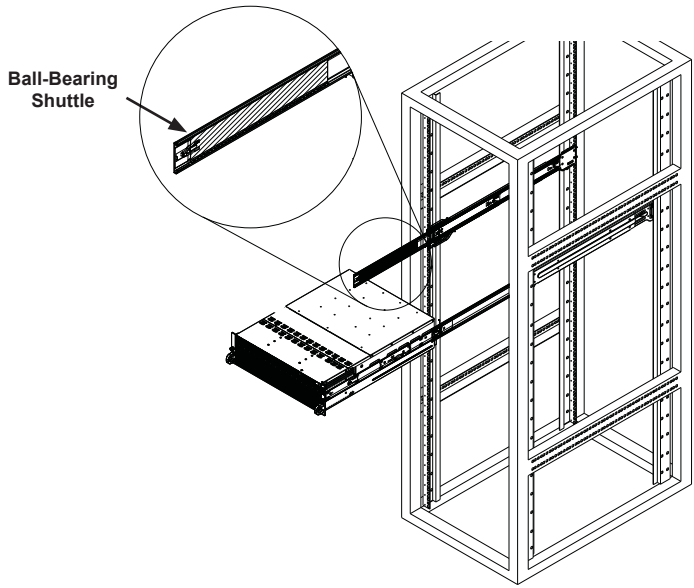



**Figure 2-6. Installing the Chassis into a Rack**

## Standard Chassis Installation

1. Confirm that the inner rails are properly installed on the chassis.
2. Confirm that the outer rails are correctly installed on the rack.
3. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.
4. Align the chassis inner rails with the front of the middle rails.
5. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.
6. Depress the locking tabs of both sides at the same time and push the chassis all the way into the rear of the rack.
7. If necessary for security purposes, use screws to secure the chassis handles to the front of the rack.

## Optional Quick Installation Method

The following quick installation method may be used to install the chassis onto a rack.

1. Install the inner rails on the chassis as previously described on page 2-6.
2. Install the whole rail assembly onto the rack as described on page 2-7.
3. Release the inner rail without retracting the middle rail.
4. Install the chassis onto the middle rail as described in the previous section.

**Stability hazard**. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

**Warning**: do not pick up the server with the front handles. They are designed to pull the system from a rack only.

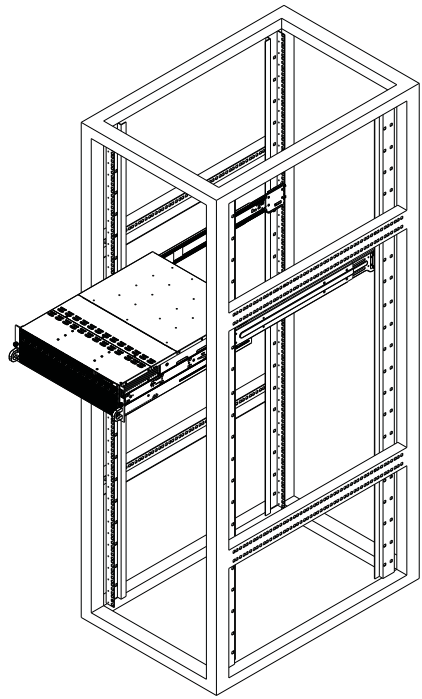


**Figure 2-7. Installing the Chassis into a Rack**

## 2-6 Preparing to Power On

***Checking the Drives***

1. Depending upon your system's configuration, your system may have hard drives already installed. If you need to install hard drives, please refer to Chapter 6.

***Checking the Airflow***

1. Airflow is provided by four 8-cm hot-swap system fans working in conjunction with air shrouds on each node. The system component layout was carefully designed to promote sufficient airflow through the chassis.

2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans. Keep this in mind when you reroute them after working on the system.

***Providing Power***

1. Plug the AC power cords into a high-quality power strip that offers protection from electrical noise and power surges.

2. It is recommended that you use an uninterruptible power supply (UPS).

3. Finally, depress the power on button on the front of the chassis.

Warning: Except for short periods of time while swapping nodes, do not operate the server with the node bays empty. In the unlikely event of a node failure, remove the failed node and replace it with the dummy node that was included with the system..

# Chapter 3

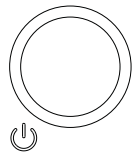
# System Interface

## 3-1 Overview

LEDs are included on the control panel, the serverboard nodes and on the drive carriers to keep you constantly informed of the overall status of the system. The SC938 features four separate control panels on the handles of the chassis to control the nodes.

This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

## 3-2 Control Panel Buttons



### Power Button/LED

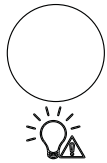
The main power button on the control panel functions as both an on/off switch and as an LED. The LED illuminates green when powered-on and is not illuminated when powered-off.

- A quick press of less than five seconds will sequentially power-on all of the nodes in order from one to eight.
- Pressing the button for longer than five seconds will sequentially power-down the nodes in order from one to eight.

Turning off system power with this button removes the main power, but keeps standby power supplied to the system. Therefore, you must completely unplug system from any power source before servicing the chassis. This does not apply to hot-swappable hard drives, serverboard nodes and system fans.

## 3-3 LEDs

### Power Failure LED



This red LED is illuminated only when a power failure occurs. The LED will illuminate when any node is powered-on and one of the power supplies fails. This LED is off during normal operation.

### Node Status LEDs

The SC938 control panel features eight numbered node status LEDs, which indicate the status of each serverboard node.

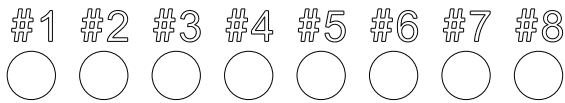



**Figure 3-1. Node Status LEDs**

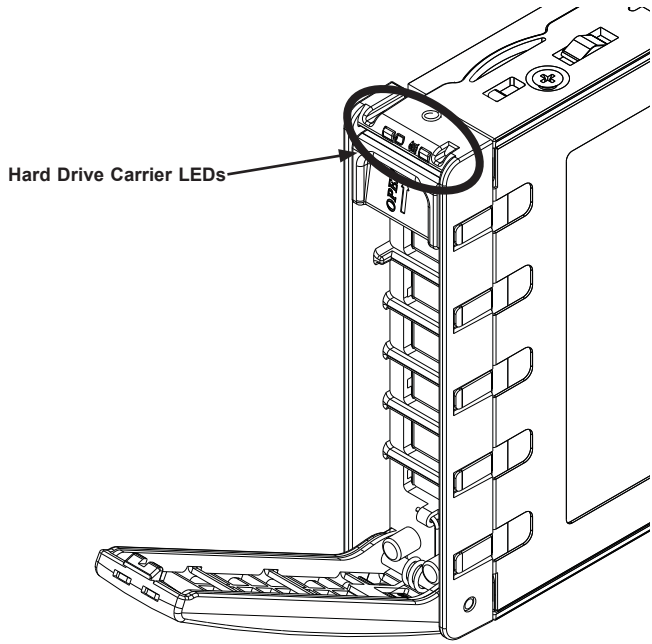
| LED Appearance | Description |
|---|---|
| Solid Green | The node is powered on and operating normally |
| Blinking Green | The node is in the process of shutting down |
| Solid Red | The node is detecting an overheated condition |
| 1Hz Blinking Red | The node is detecting a fan failure |
| .25Hz Blinking Red | The node is detecting a power failure |
| Solid Blue | The node local UID is on |
| 1Hz Blinking Blue | The node remote UID is on |
| No Illumination | The node is powered-down |

## 3-4 Hard Drive Carrier LEDs

The hard drives ued in the SC938 chassis are installed in drive carriers. Each drive carrier has two LEDs located on the front of the carrier.

- Green: Each drive carrier has a green LED. When illuminated, this LED indicates drive activity. A connection to the SAS/SATA backplane enables this LED to blink on and off when that particular drive is being accessed.
- Red: Indicates a drive failure. If one of the drives fail, you should also be notified by your system management software.

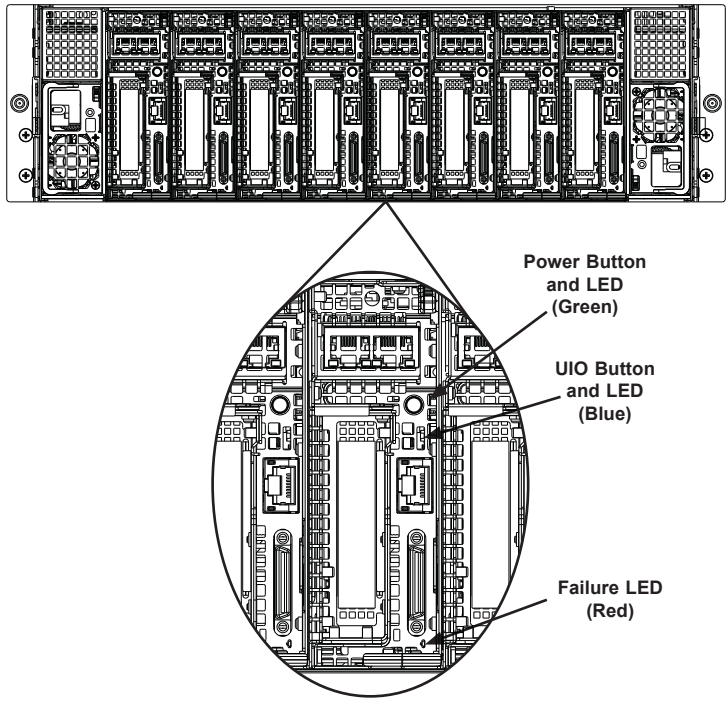
**Figure 3-2. Hard Drive Carrier LEDs**




## 3-5 Node LEDs

Individual LEDS are located on the back of each serverboard node on the rear of the chassis.

**Figure 3-3. Rear Node LED Indicators**




## Power Button and LED

This button will power on the node individually. It is illuminated green when the node is powered on, it is off (unilluminated ) when the node is powered off.

## UIO Button and LED

This button is used to identify the node within the system. It is illuminated blue when activated, it is off when inactive.

## Failure LED

This LED is illuminated red when a failure has occurred and off during normal operation. If illuminated, check that the two corresponding hard drives are fully inserted into their bays with their handles completely pushed in. Check also that the fan is operating properly and that the node is fully inserted into its bay.

## 3-6 Adding PCI-E HBA/RAID Cards

The 5037MC-H86RF supports one low-profile PCI-E HBA/RAID card in each of the eight nodes. To install an expansion card, follow the instructions below.

***Installing an Add-on Card***

1. Power-down the node using that node's individual power button and remove it as described in Chapter 6.
2. Open the PCI-E slot clip and remove the PCI-E slot shield.
3. Open the PCI-E slot clip in the rear of the motherboard node.
4. Remove the PCI-E slot shield.
5. Insert the expansion card into the riser card which is pre-installed on the motherboard (if desired the riser card may be removed from the motherboard by removing the riser card screw)
6. Slide the expansion cards bracket into the PCI-E card slot and fit it with the opening in the rear of the node.
7. Close the PCI-E card slot clip to secure the expansion card.

**Note:** The PCI-E slot shields protect the motherboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused slot.

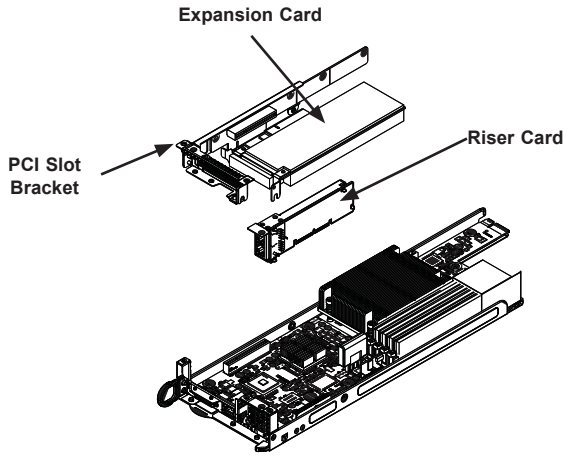



**Figure 3-4: Installing the Expanion Card**

**Note:** The node and motherboard shown above are examples. Your actual node and motherboard may vary from those illustrated)

**Note:** Without the HBA/RAID card installed, the front SATA drives will not work.

## Notes

# Chapter 4

# Standardized Warning Statements for AC Systems

## 4-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

### Warning Definition

**Warning!**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

**警告の定義**

**この警告サインは危険を意味します。**

**人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、**

**電気回路に含まれる危険性に**注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

**תקנון הצהרות אזהרה**

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .
قبل أن تعمل على أي معدات،كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

## Installation Instructions

**Warning!**

Read the installation instructions before connecting the system to the power source.

**設置手順書**

**システムを電源に接続する前に、設置手順書をお読み下さい。**

警告
将此系统连接电源前,请先阅读安装说明。

警告
將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

**יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.**

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

## Circuit Breaker

**Warning!**

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

**サーキット・ブレーカー**

**この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。**

**保護装置の定格が250 V、20 Aを超えないことを確認下さい。**

警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

警告

此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V,20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

**מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-**250 V, 20 A

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في المبنى
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 220V, 20A.

## Power Disconnection Warning

**Warning!**

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

**電源切断の警告**

**システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、**
**システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。**

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de systéme.

**אזהרה !**

**יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.**

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل
الوصول إلى المناطق الداخلية للهيكل لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 섀시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

## Equipment Installation

**Warning!**

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

**機器の設置**

**トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。**

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

**אזהרה !**

**צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.**

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب واستبدال أو خدمة هذا الجهاز

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

## Restricted Area

**Warning!**

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

**アクセス制限区域**

**このユニットは、アクセス制限区域に設置されることを想定しています。**

**アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。**

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

**אזור עם גישה מוגבלת**

**אזהרה !**
**יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי אבטחה בלבד (מפתח, מנעול וכד').**

تم تخصيص هذه الوحدة لتركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للالأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

## Battery Handling

**Warning!**

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

**電池の取り扱い**

**電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。**

警告
电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告
電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

**אזהרה !**

**קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.**

**סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.**

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية
فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة
تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

## Redundant Power Supplies

**Warning!**

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

**冗長電源装置**
**このユニットは複数の電源装置が接続されている場合があります。**
**ユニットの電源を切るためには、すべての接続を取り外さなければなりません。**

警告
此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告
此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

**אם קיים יותר מספק אחד**

**אזהרה!**
**ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.**

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

## Backplane Voltage

**Warning!**

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

**バックプレーンの電圧**
**システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。**
**修理する際には注意ください。**

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

**מתח בפנל האחורי**

**אזהרה !**
**קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.**

هناك خطر من التيار الكهربائي أوالطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

## Comply with Local and National Electrical Codes

**Warning!**

Installation of the equipment must comply with local and national electrical codes.

**地方および国の電気規格に準拠**
**機器の取り付けはその地方および国の電気規格に準拠する必要があります。**

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales.

Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

**תיאום חוקי החשמל הארצי**

**אזהרה !**
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

## Product Disposal

**Warning!**

Ultimate disposal of this product should be handled according to all national laws and regulations.

**製品の廃棄**

**この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。**

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

**סילוק המוצר**

**אזהרה !**
**סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.**

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

## Hot Swap Fan Warning

**Warning!**

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

**ファン・ホットスワップの警告**

**シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。**

警告
当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告
當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

**אזהרה !**
**כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאוררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר**

من الممكن أن المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي
وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조림품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

## Power Cable and AC Adapter

**Warning!**

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

**電源コードとACアダプター**

**製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。**

警告

安装此产品时,请使用本身提供的或指定的连接线,电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

**חשמליים ומתאמי AC**

**אזהרה !**

**כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרמיקרו בלבד.**

عند تركيب الجهاز يجب استخدام كابلات التوصيل،والكابلات الكهربائية ومحولات التيار المتردد
التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق.
تم توفيرها لك مع المنتج
الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL معتمدة من قبل
لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro
(التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

## Notes

# Chapter 5

# Advanced Motherboard Setup

This chapter covers the steps required to install the motherboard modules into the chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the server to better cool and protect the system.

## 5-1 Handling the Motherboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

### Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

### Unpacking

The motherboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

## 5-2 Motherboard Installation

The X9SCD+-HF motherboards have been preinstalled into carriers to simplify installing and removing the nodes from the SC938H-R1620B chassis. The motherboards should remain in these carriers at all times. If a failed node needs to be returned for repair or replacement, the motherboard is to be shipped assebled in its carrier and not by itself. See Chapter 6 for instructions on installing and removing the motherboard nodes from the chassis.

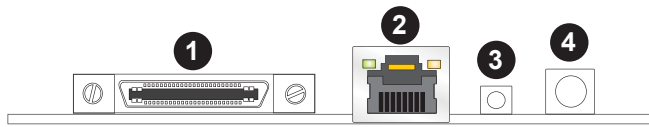
## 5-3 Connecting Cables

The 5037MC-H86RF server requires one supported Add-On Card per node in order to support SAS/SATA drives. All power and data connections to the serverboard nodes will be made through the cables included with the Add-On Card. When routing the cables keep proper airflow in mind.

## 5-4 I/O Ports

The I/O ports are located at the back of the motherbord node. See Figure 5-1 below for the colors and locations of the various I/O ports.

**Figure 5-1. I/O Ports**




| I/O Ports | | | |
|---|---|---|---|
| 1 | KVM Port | 3 | UID Button |
| 2 | IPMI Port | 4 | Power Button and LED |

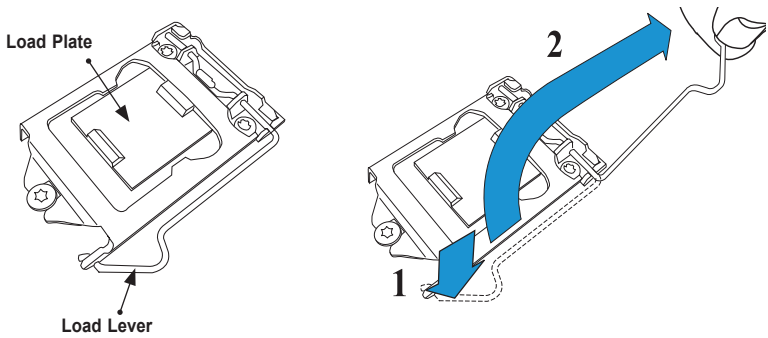
## 5-5 Processor and Heatsink Installation

**Notes:**

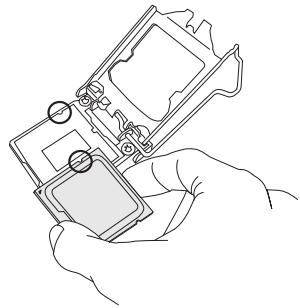
- When changing the CPU in a node, always power down the node first and remove it from the chassis. Make sure that you install the CPU into its socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- When receiving a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

### Installing an LGA1155 Processor

1. Press the load lever to release the load plate, which covers the CPU socket, from its locked position.
2. Gently lift the load lever to open the load plate. Remove the plate cap.



3. Use your thumb and your index finger to hold the CPU at the top center edge and the bottom center edge of the CPU.



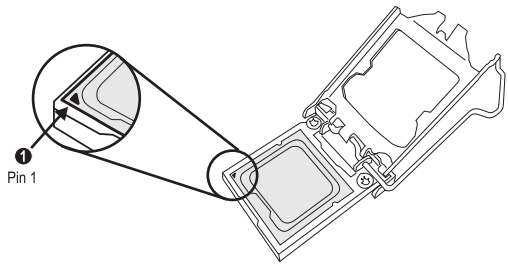
4. Align the CPU key (the semi-circle cutouts) against the socket keys. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.

   Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

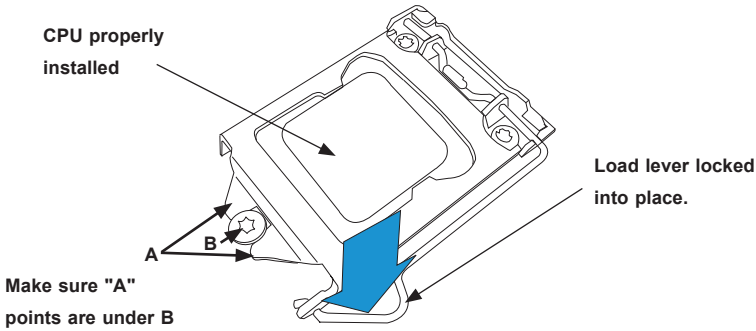
   With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

5. Use your thumb to gently push the load lever down to the lever lock.

   Save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.




**Warning:** The CPU will only seat inside the socket in one direction. Make sure it is properly inserted before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.




## Installing a Heatsink

1. With the node removed, remove the air shroud as described in Section 6-7.

2. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

3. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the motherboard and the heatsink bracket underneath.

4. Screw in two diagonal facing screws until just snug (do not over-tighten the screws to avoid possible damage to the CPU.)

5. Finish the installation by fully tightening all four screws.

6. Reverse the order of this procedure to remove a heatsink.

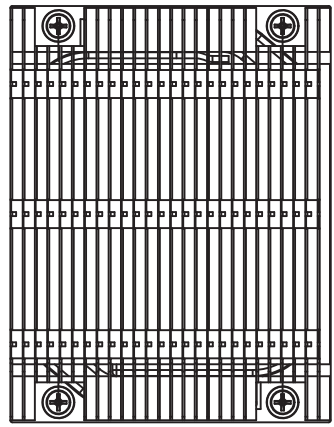


**Figure 5-2. Installing a Heatsink**

## 5-6 Installing Memory

CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

### How to Install Memory

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A, then DIMM2A, DIMM1B, DIMM2B. Pay attention to the notch along the bottom of the module to prevent incorrect installation.

2. Insert each DIMM module vertically push down until it and snaps into place. Repeat to install more memory, if needed. See instructions on the next page.

### Memory Support

Each X9SCD+-HF supports up to 32GB of ECC DDR3 UDIMM memory (1066/1333 MHz) in four DIMM slots. Please refer to the product page on our web site for possible updates to memory support.

**Installing and Removing DIMMs**

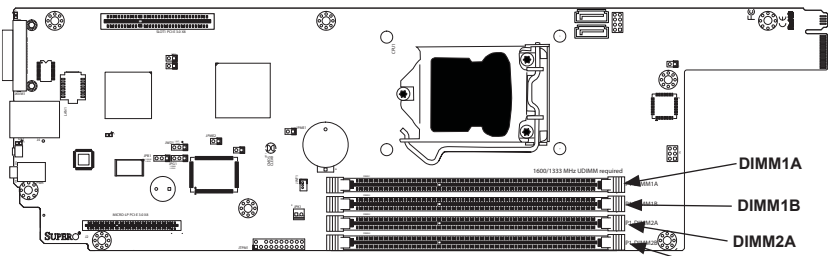
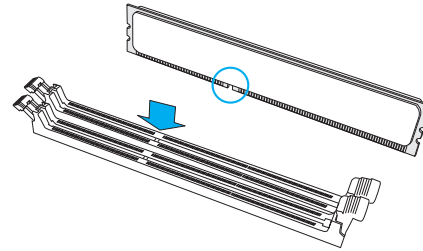


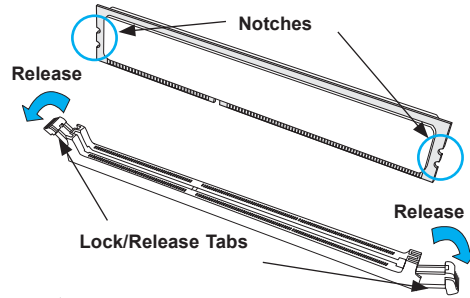

**Image rotated 90°**

## Installing and Removing DIMMs

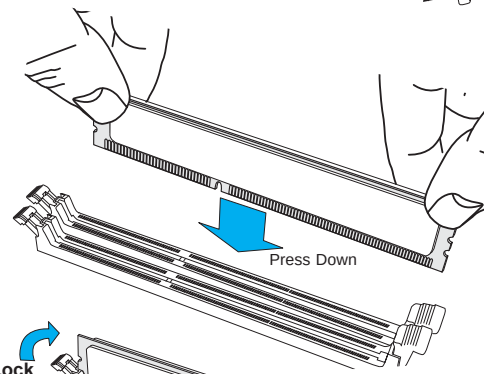
Position the DIMM module's bottom key so that it aligns with the receptive point on the slot.



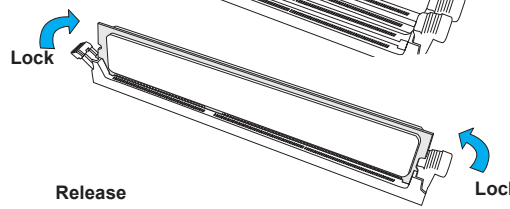
Push a lock/release tab to the release position. Make sure that the side notches of the DIMM module aligns with the lock/release tab of the slot as it is pressed in.




Insert the DIMM module vertically and press down until the module snaps into place.

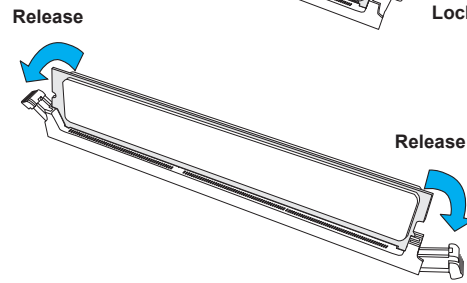



When the module is properlly inserted, the lock/release tabs will automatically secure the DIMM module, locking it into place.




**To Remove:**

Use your thumbs to gently push the lock/release tabs near both ends of the module. This should release it from the slot. Pull the DIMM module upwards.



## Guidelines for Populating Memory

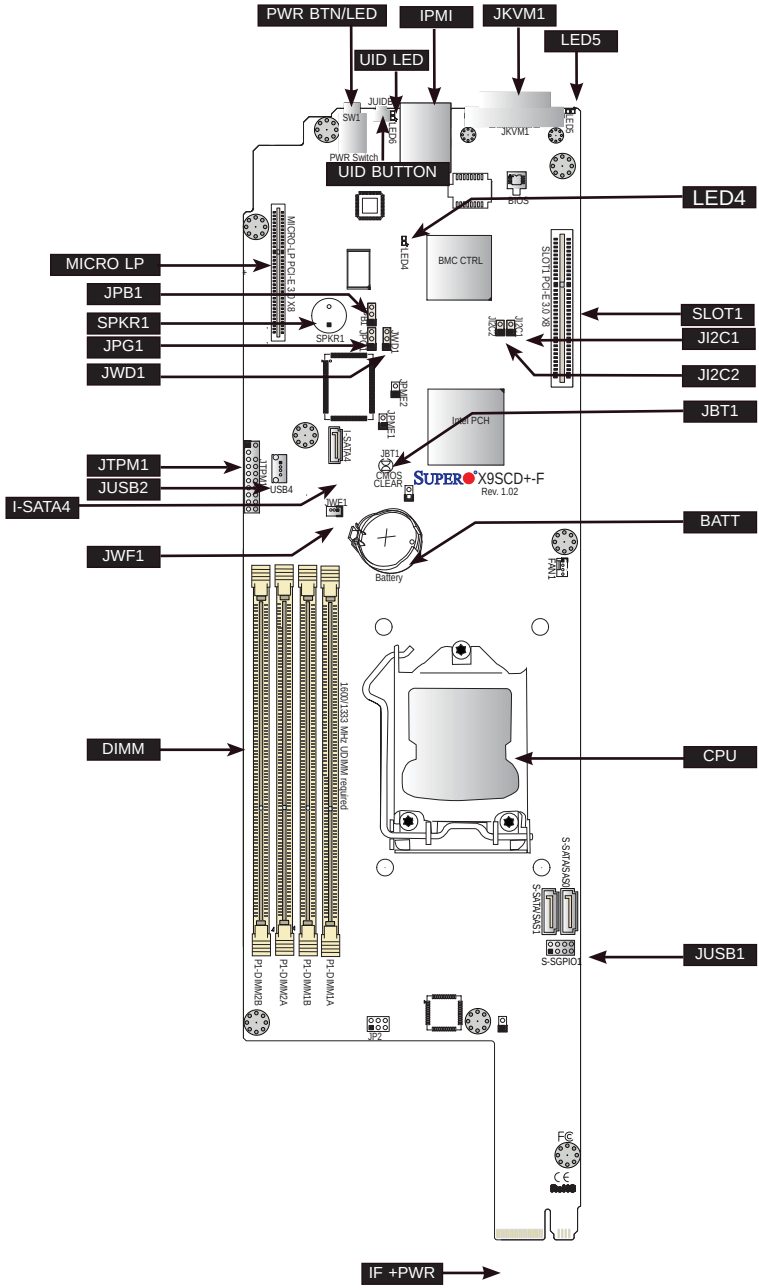
When installing memory modules, the DIMM slots should be populated in the following order: DIMM1B, DIMM2B, DIMM1A and DIMM2A.

- Always use DDR3 DIMM modules of the same size, type and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- Although the motherboard can support one or three DIMM modules installed, memory should be installed in pairs for best performance.

| Recommended Population (Balanced) | | | | |
|---|---|---|---|---|
| **DIMM2A Slot** | **DIMM2B Slot** | **DIMM1A Slot** | **DIMM1B Slot** | **Total System Memory** |
| | 2GB DIMM | | 2GB DIMM | 4GB |
| 2GB DIMM | 2GB DIMM | 2GB DIMM | 2GB DIMM | 8GB |
| | 4GB DIMM | | 4GB DIMM | 8GB |
| 4GB DIMM | 4GB DIMM | 4GB DIMM | 4GB DIMM | 16GB |

## 5-7 Motherboard Details

**Figure 5-3. X9SCD+-HF Layout**



| X9SCD+-HF Quick Reference | | |
|---|---|---|
| **Jumper** | **Description** | **Default Setting** |
| JBT1 | CMOS Clear | See Section 5-11 |
| JPB1 | BMC Enable/Disable | Pins 1-2 (Enabled) |
| JI2C1, JI2C2 | SMB to PCI Slots | See Section 5-11 |
| JPG1 | Onboard VGA Enable/Disable | Pins 1-2 (Enabled) |
| JWD1 | Watch Dog Timer | Pins 1-2 (Reset) |

| **Connector** | **Description** |
|---|---|
| Battery | Onboard Battery |
| CPU | Socket H2 (LGA1155) for a single Xeon E3-1200 series CPU |
| IF + PWR | Back Panel Edge Connector (SATA/Power) |
| IPMI | RJ45 IPMI Port |
| I-SATA4 | Internal SATA Port |
| JKVM1 | USB / VGA / UART Interface |
| JTPM1 | Trusted Platform Module (TPM) Header |
| JUSB1 | Internal (Type A) USB Port |
| JWF1 | SATA Disk On Module (DOM) Power Connector |
| Micro LP Slot | PCI-E 3.0 x8 Micro LP Slot |
| SW1 | Power Button and LED |
| Slot1 | PCI-E 3.0 x8 Slot |
| SPKR1 | Internal Speaker / Buzzer |
| JUIDB1 | Unit ID Button |

| **LED** | **Description** |
|---|---|
| LED4 | IPMI Heartbeat (Green: Blinking = Normal) |
| LED5 | HDD Fail LED via IPMI |
| UID LED | Unit ID LED |

## 5-8 Connector Definitions

### IF + POWER

This edge connector, located on the opposite end of the motherboard from the I/O back panel, is used to connect the motherboard to the backplane of the server chassis. Through this connector, the motherboard will receive its power and communicate with the rest of the system (hard drives, warning lamps, etc).

### TPM Header

This header is used to connect a Trusted Platform Module (TPM), that is available from a third-party vendor. A TPM is a security device that allows encryption and authentication of hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. See the table on the right for pin definitions.

**Trusted Platform Module Header Pin Definitions**

| Pin # | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | LCLK | 2 | GND |
| 3 | LFRAME | 4 | No Pin |
| 5 | LRESET | 6 | VCC5 |
| 7 | LAD3 | 8 | LAD2 |
| 9 | VCC3 | 10 | LAD1 |
| 11 | LAD0 | 12 | GND |
| 13 | RSV0 | 14 | RSV1 |
| 15 | SB3V | 16 | SERIRQ |
| 17 | GND | 18 | CLKRUN |
| 19 | LPCPD | 20 | RSV2 |

### Universal Serial Bus (USB)

A Type A USB connector is located on the motherboard. See the table on the right for pin definitions.

**Type A USB Pin Definition**

| Pin# | Definition |
|---|---|
| 1 | +5V |
| 2 | PO-- |
| 3 | PO+ |
| 4 | Ground |
| 5 | NA |

### SATA DOM Power (JWF1)

The SATA DOM Power on JWF1 is used to supply power to SATA Disk-on-Module (DOM) solid-state storage devices.

**USB Header Pin Definitions**

| Pin # | Definition |
|---|---|
| 1 | +5V |
| 2 | Ground |
| 3 | Ground |

## 5-9 I/O Port Definitions

### KVM Port

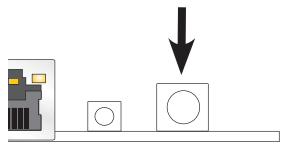
The KVM port (JKVM) supports keyboard, mouse and VGA via UART interface. Please attach a compatible KVM connector/switch to this port.

### IPMI Port

A dedicated IPMI LAN port is located next to the KVM port to provide dedicated network connection for IPMI 2.0. This port accepts RJ45 type cables.

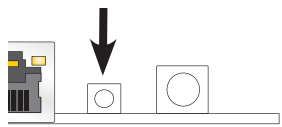
### Power Button & LED

A Power Button and LED is located right next to the IPMI port. Push this button to turn on the motherboard. When lit, it indicates that this particular motherboard is turned on.



### UID Button

The Unit ID (UID) Button is used in conjunction with the UID switch in front of the chassis and the UID LED located next to it. When the switch is turned on, the UID LED will turn on, making pinpointing of the node from the front or back panel easier, when servicing is required for instance. See UID LED in Chapter 3.

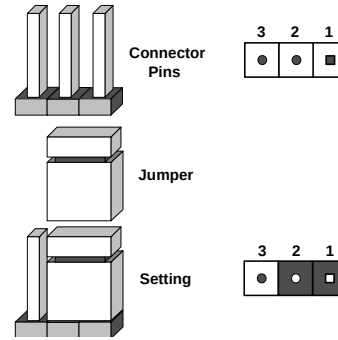


## 5-10 Jumper Settings

### Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

**Note:** On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" means the jumper is either on only one pin or completely removed.




### CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

***To clear CMOS,***

1. First power down the system and unplug the power cord(s). It is also recommended that you remove the onboard battery from the motherboard.
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and onboard battery and power on the system.

**Note:** *Do not use the PW_ON connector to clear CMOS.*

### VGA Enable (JPG1)

JPG1 allows the user to enable the onboard VGA connector (through the KVM). Close pins 1~2 to enable the VGA. The default setting is Enabled.

**VGA Enable/Disable Jumper Settings**

| Jumper Setting | Definition |
|---|---|
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

### Watch Dog RST/NMI Selection (JWD1)

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1~2 to reset the system if an application hangs. Close pins 2~3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

**Watch Dog Jumper Settings**

| Jumper Setting | Definition |
|---|---|
| Pins 1-2 | Reset |
| Pins 2-3 | NMI |
| Open | Disabled |

### SMB ($I^2C$) Bus to PCI Slots (JI2C1/ JI2C2)

Jumpers $JI^2C1$ and $JI^2C2$ allow you to connect the System Management Bus (SMB) to the PCI-E slots. The default setting is set to Disabled. See the table on the right for jumper settings.

**$I^2C$ to PCI-Slots Jumper Settings**

| Jumper | Definition |
|---|---|
| On | Enabled |
| Off | Disabled (Default) |

### BMC Enable/Disable (JPB1)

Jumper JPB1 allows you to enable the embedded BMC (Baseboard Management Controller) to provide IPMI 2.0/ KVM support on the motherboard. See the table on the right for jumper settings.

**BMC Enable Jumper Settings**

| Pin# | Definition |
|---|---|
| 1-2 | Enabled (default) |
| 2-3 | Disabled |

# 5-11 Onboard Indicators

### IPMI Dedicated LAN Port

An IPMI Dedicated LAN port installed on the I/O back panel. The yellow LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the tables at right for more information.

| IPMI LAN Link Speed LED (Left) & Connection Activity LED (Right) | | |
|---|---|---|
| LED | Color/State | Definition |
| Off | Off | No Connection or 10 Mbps |
| Activity | Amber: Blinking | Active |
| Speed | Green: Solid On | 100 Mbps |

### IPMI Heartbeat LED

An IPMI Heartbeat LED is located at LED4. When LED4 blinks, the IPMI functions properly. Refer to the table on the right for details.

| IPMI Heartbeat LED Indicator | |
|---|---|
| Blinking | IPMI is ready for use |

### HDD Fail LED

LED5 indicates a system failure when illuminated. Please see the table on the right for message descriptions.

| HDD Fail LED Indicator | |
|---|---|
| LED Color | Definition |
| Off | HDD Normal |
| On/Blinking | HDD Failure |

### Unit ID LED

The Unit LED is controlled by the Unit ID Button. It enables the user to pinpoint this particular motherboard that may be in need of service. Turn on the UID button in the front of the chassis or on the motherboard's I/O panel to identify the unit in need of servicing.

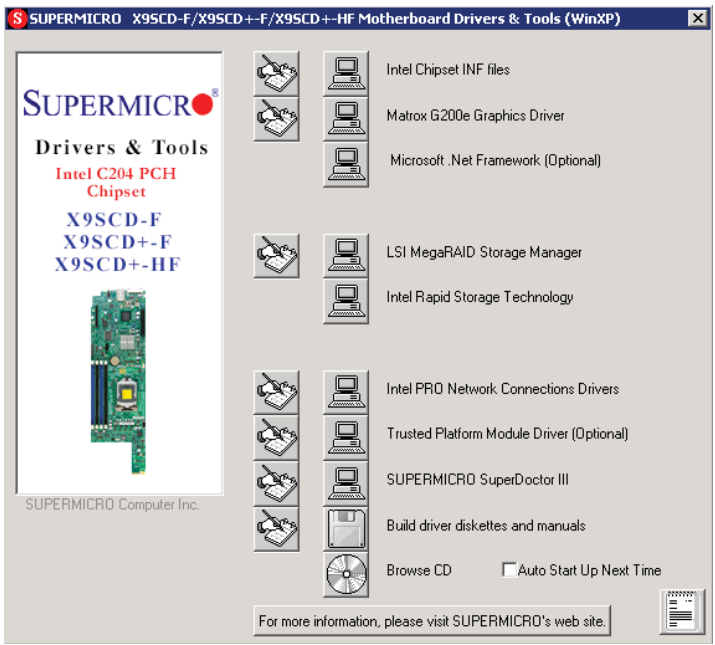
| Unit ID LED LED Settings | |
|---|---|
| On (Steady) | Unit ID switch is on |

## 5-12 SATA Drive Connections

The SATA drive connections are made automatically when a drive is inserted into its bay in the chassis. A supported Add-On Card must be installed to support SAS/SATA drives.

## 5-13 Installing Software

After the hardware has been installed, you should first install the operating system and then the drivers. The necessary drivers are all included on the Supermicro CDs that came packaged with your motherboard.




**Driver/Tool Installation Display Screen**

**Note:** Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

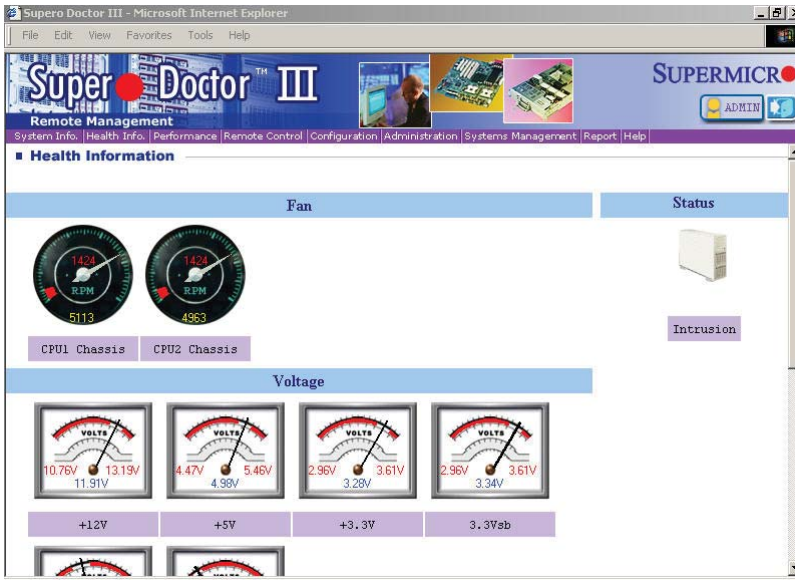
### SuperDoctor III

The SuperDoctor III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program included on the CD-ROM that came with your motherboard allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the SuperDoctor III interface.

**Note:** The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

**Note:** When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within Super Doctor, as the Super Doctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

**SuperDoctor III Interface Display Screen (Health Information)**



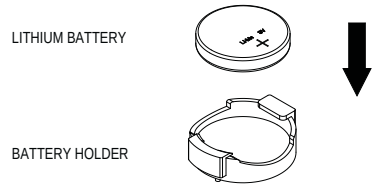
**SuperDoctor III Interface Display Screen (Remote Control)**

Note: SD III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will recommend using SuperDoctor II.

## 5-14 Onboard Battery

Care must be taken to assure that the chassis cover is in place when the 5037MC-H86RF is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

**Figure 5-4. Installing the Onboard Battery**




Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

## Notes

# Chapter 6

# Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC938H-R1620B chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

## 6-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- The person unpacking the system should be static protected.

## 6-2 Removing the Chassis Cover

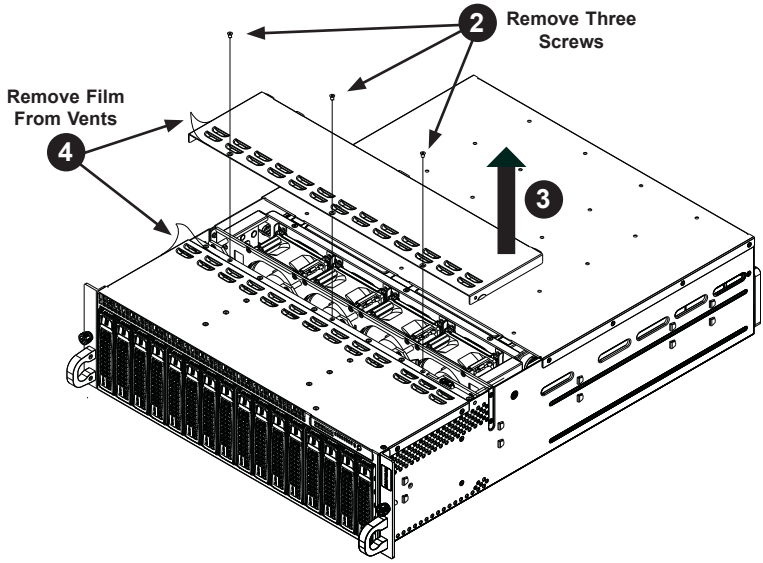



**Figure 6-1. Removing the Chassis Cover**

**IMPORTANT:** Before operating the SC938H for the first time, it is important to remove the protective film covering the ventilation openings on the top of the chassis. These vents provide proper ventilation and cooling for the system.

***Removing the Chassis Cover and Protective Film***

1. Disconnect the chassis from any power source.
2. Remove the three screws which secure the top cover to the chassis as illustrated above.
3. Lift the top cover up and off the chassis.
4. Peel off the protective film covering the top cover and the top of the chassis
5. Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

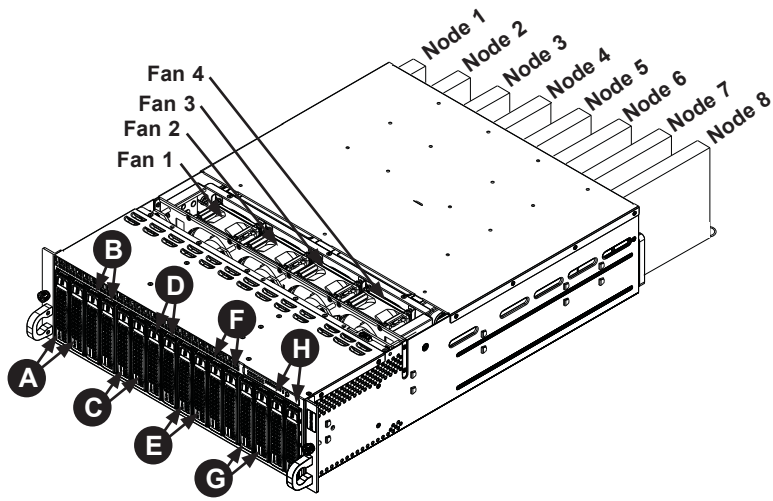
Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

## 6-3 Corresponding Nodes, Fans and Hard Drives

The SC938H chassis contains eight individual motherboards contained in separate nodes. Each node controls two hard drives and shares a fan with the node beside it. Note that if a node is pulled out of the chassis, the hard drives associated with that node will power-down.

| Corresponding Nodes, Fans and HDDs | | |
|---|---|---|
| Node | Fan | HDDs |
| Node 1 | Fan 1 | HDDs A1 and A2 |
| Node 2 | Fan 1 | HDDs B1 and B2 |
| Node 3 | Fan 2 | HDDs C1 and C2 |
| Node 4 | Fan 2 | HDDs D1 and D2 |
| Node 5 | Fan 3 | HDDs E1 and E2 |
| Node 6 | Fan 3 | HDDs F1 and F2 |
| Node 7 | Fan 4 | HDDs G1 and G2 |
| Node 8 | Fan 4 | HDDs H1 and H2 |

**Figure 6-2. Corresponding Nodes, Fans and HDDs**



## 6-4 Removing and Installing Hard Drives

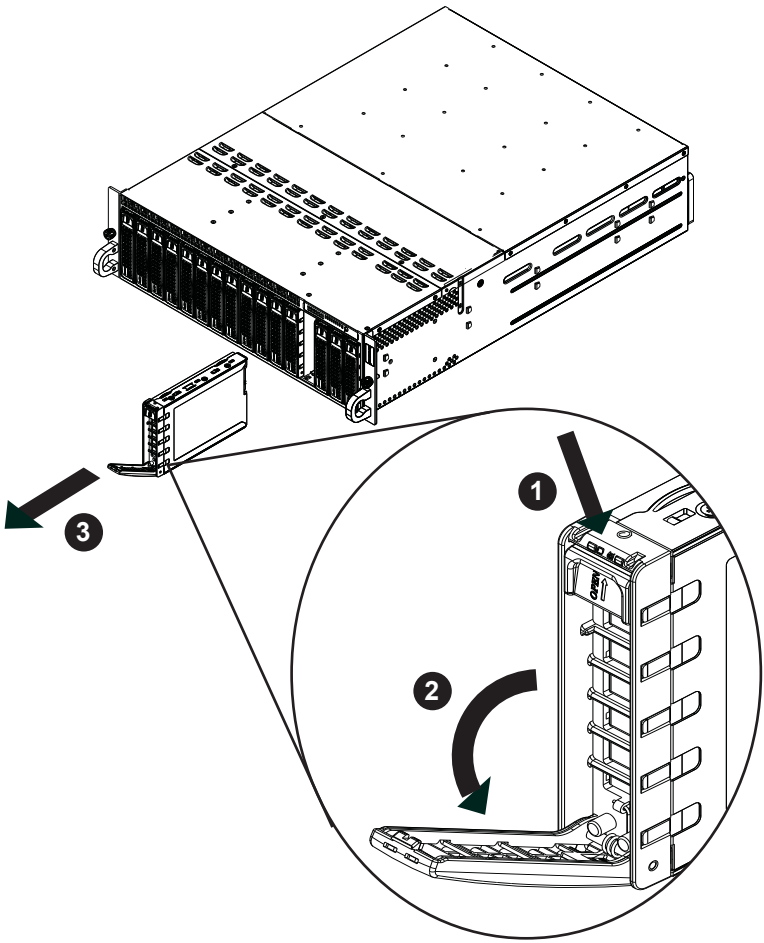
The SC938H features sixteen hot-swappable hard drives. These hard drives are contained in drive carriers and may be removed without powering-down the system.

***Removing Hard Drive Carriers from the Chassis***

1. Press the release button on the drive carrier, which will extend the drive carrier handle.

2. Use the drive carrier handle to pull the drive out of the chassis.

**Figure 6-3. Removing a Hard Drive**



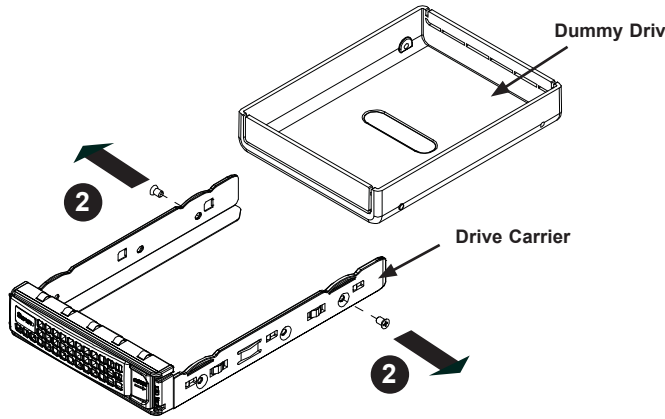



**Figure 6-4. Removing a Dummy Drive from the Drive Carrier**

The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow through the drive bays.

***Removing the Dummy Drive from the Drive Carrier***

1. Remove the hard drive carrier from the chassis as described in the previous section and lay the drive carrier on a flat surface.

2. Remove the two screws securing the dummy drive to the drive carrier.

3. Lift the dummy drive from the drive carrier.

Warning: Except for short periods of time while swapping hard drives, do not operate the server with the hard drive bays empty. All carriers (even without hard drives present) must remain in their bays to maintain proper airflow.

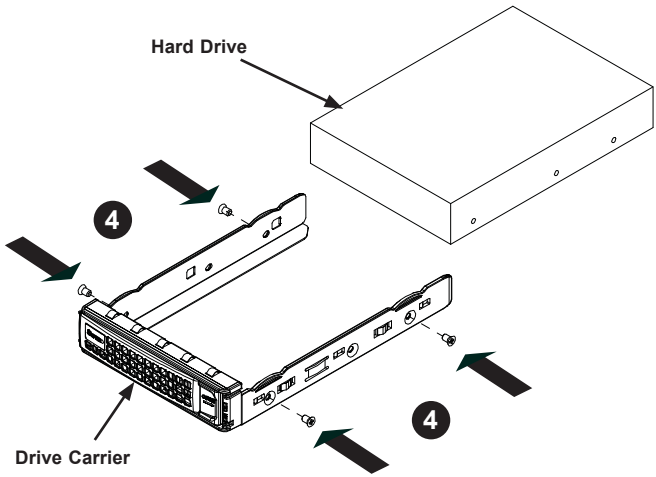



**Figure 6-5. Installing a Hard Drive**

***Installing a Hard Drive into the Drive Carrier***

1. Place the hard drive carrier on a flat surface.

2. Insert the hard drive into the carrier with the printed circuit board side facing downward and so that the mounting holes in the drive align with those in the drive carrier.

3. Secure the hard drive to the carrier with the four screws included with the hard drive.

4. Use the open handle of the drive carrier to insert the drive carrier into the open drive bay.

5. Secure the drive carrier into the drive bay by closing the drive carrier handle.

Regardless of how many hard drives are installed, all drive carriers must remain in the drive bays to promote proper airflow.

Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/storage.cfm

## 6-5 Removing and Installing the Backplane

The backplane is attached to the fan bracket, which is located in the midsection of the chassis. In the unlikely event of a backplane failure, follow the instructions below to replace it.

### Removing the Backplane and Fan Bracket Assembly

***Removing the Backplane and Fan Bracket from the Chassis***

1. Power down the system and disconnect it from any power source.
2. Remove the chassis cover as described in section 6-2 of this manual.
3. Disconnect all cabling to the backplane.
4. Remove the six screws securing the fan bracket to the chassis and set them aside for later use.
5. Lift the fan bracket and backplane out of the chassis.

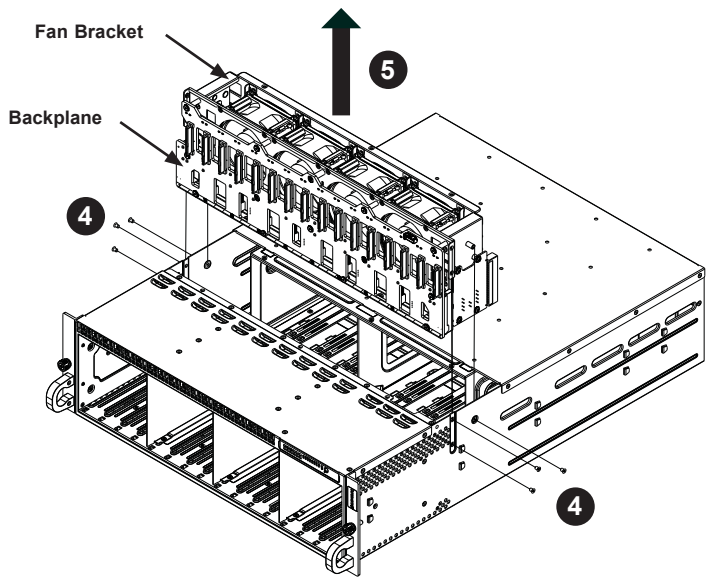



**Figure 6-6. Removing the Fan Bracket and Backplane**

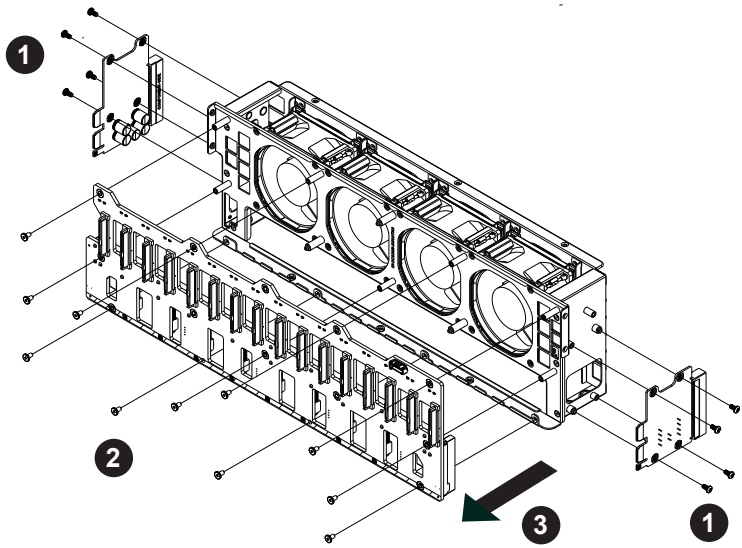



**Figure 6-7. Removing the Backplane from the Fan Bracket**

## Removing the Backplane from the Fan Bracket

***Removing the Backplane***

1. Remove the eight screws securing the two side mounting brackets to the sides of the fan bracket and set them aside for later use. Remove the side mounting brackets.

2. Remove the eleven screws securing the backplane to the fan bracket and set these screws aside for later use.

3. Hold the backplane by its edges and carefully remove it from the fan bracket.

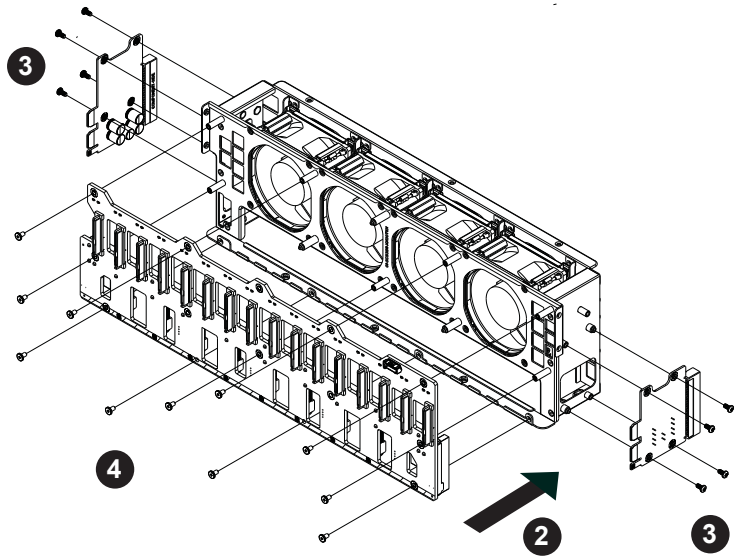



**Figure 6-8. Installing the Backplane onto the Fan Bracket**

## Installing the Backplane onto the Fan Bracket

***Installing the Backplane***

1. Ensure that all power has been disconnected from the chassis.

2. Hold the backplane by its edges and carefully place it against the fan mounting bracket, aligning the mounting holes in the backplane with those in the fan bracket.

3. Secure the two side mounting brackets to the backplane with the eight screws previously set aside.

4. Secure the backplane to the front of the fan bracket using the eleven screws previously set aside.

5. Reconnect all wiring to the backplane.

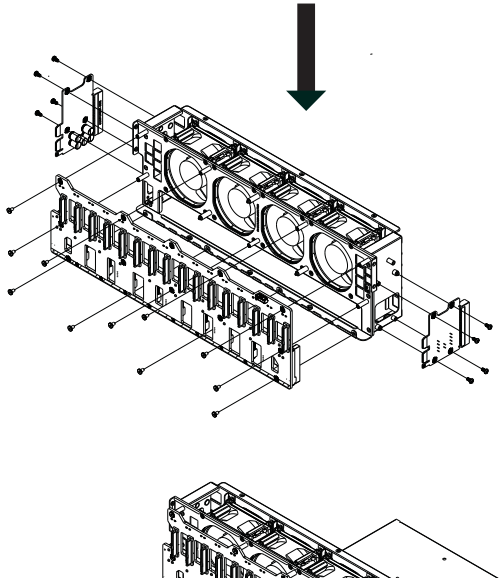


**Figure 6-9. Installing the Backplane and Fan Bracket**

## Installing the Backplane and Fan Bracket Assembly

***Installing the Backplane and Fan Bracket***

1. Ensure that the chassis has been disconnected from any power source.
2. Remove the chassis cover as described in Section 6-2.
3. Reconnect the wiring to the backplane.
4. Insert the fan bracket and backplane assembly into the chassis as illustrated above.
5. Secure the fan bracket to the chassis with the six screws that were previously set aside.

## 6-6 Removing and Installing Motherboard Nodes

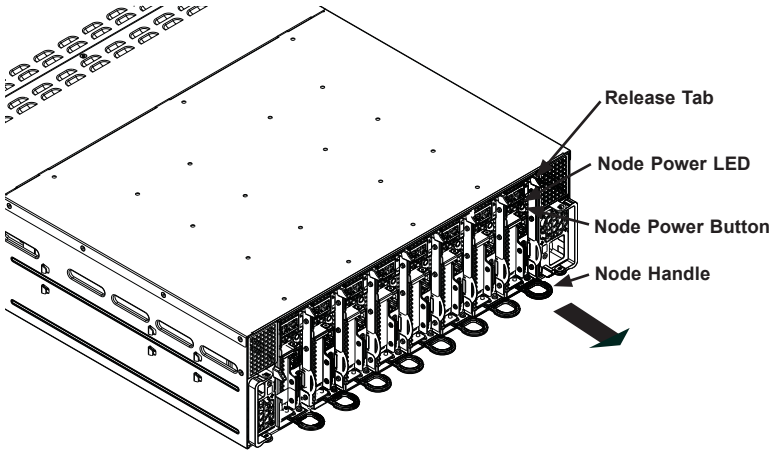



**Figure 6-10. Removing Nodes from the System**

The SC938H chassis comes equipped with eight removable nodes, each one containing an individual motherboard. Removing these nodes will also power-down the corresponding hard drives. See the table in Section 6-3 to determine which hard drives are controlled by each node.

***Removing Nodes from the System***

1. Power-down the individual node by pressing that node's power button.
2. Press and hold down the release tab on the back of the node.
3. Using the node's handle, pull the node from the chassis.

Warning: Except for short periods of time while swapping nodes, do not operate the server with the node bays empty. In the unlikely event of a node failure, remove the failed node and replace it with the dummy node that was included with the system..

## 6-7 Installing an Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The SC938H chassis requires that air shrouds be used in each node.

***Installing the Air Shroud***

1. Make sure that the motherboard expansion card (if present) and all components are properly installed in each motherboard node.
2. Place the air shroud over the motherboard, as shown below. The air shroud sits behind the system fans and goes over the top of the motherboard and its components. Secure by inserting screws through the tabs and tightening.
3. Repeat the procedure for the remaining nodes.
4. Reverse this procedure to remove an air shroud.

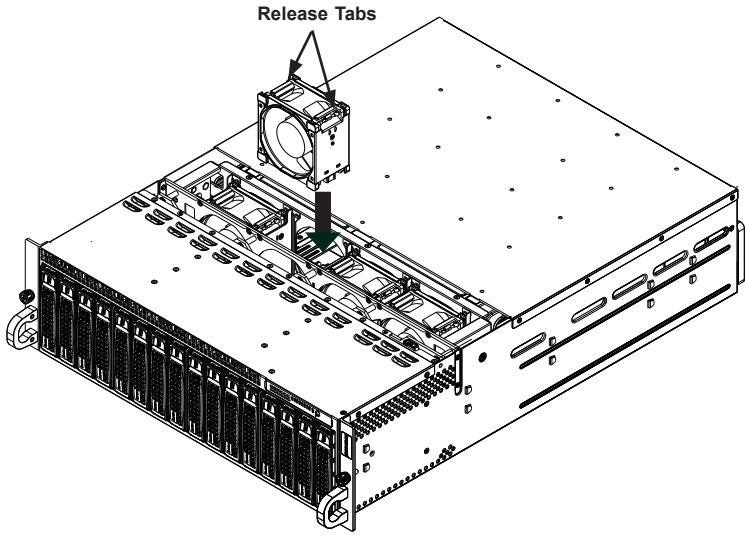
## 6-8 System Fans

Four 8-cm fans circulate air through the chassis to lower the internal temperature. The SC938H system fans are designed to be easily changed, with no tools required and no need to remove any other parts inside the chassis. See Section 6-3 to determine which nodes and hard drives are cooled by each system fan.

***Replacing a System Fan***

1. If necessary, open the chassis top cover while the system is operating to determine which fan has failed. Never run the server for an extended period of time with the top cover open.
2. Remove the failed fan's power cord from the backplane.
3. Simultaneously squeeze both release tabs on the top of the fan module.
4. Lift the fan module up and out of the chassis.
5. Place the replacement fan into the vacant space in the fan bracket while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Put the fan back into the chassis and reconnect the cable.
7. Confirm that the fan is working properly before replacing the chassis cover.

**Figure 6-11. System Fan Placement**




## 6-9 Power Supply

The SC938H chassis includes a redundant 1620 watt power supply, which is auto-switching capable. This enables it to automatically sense and operate at a 100V to 240V input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

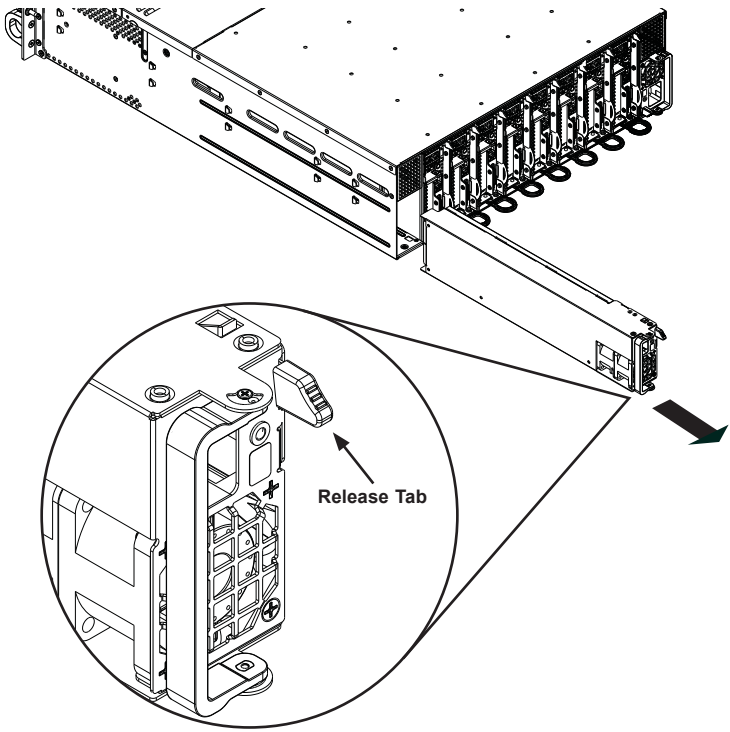
### Power Supply Replacement

In the unlikely event that one of the power supplies needs to be replaced, one power supply can be removed without powering-down the system. Replacement power supply units may be ordered directly from Supermicro  See the contact information in the Preface of this manual or visit www.supermicro.com.

***Changing the Power Supply***

1. Unplug the AC power cord from the failed power supply.
2. With the system running, press the release tab at the top of the power supply
3. Push and hold the release tab on the back of the power supply.
4. Pull the power supply out using the handle provided.
5. Push the replacement power supply module into the chassis' power bay until it clicks into the locked position.
6. Plug the AC power cord back into the power supply module and power- up the nodes if needed (with a single power supply failure, the nodes should continue to run).

**Figure 6-12. Changing the Power Supply**



## Notes

# Chapter 7

# BIOS

## 7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X9SCD+-HF motherboard. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

**Note:** For instructions on BIOS recovery, please refer to the instruction guide posted at http://www.supermicro.com/support/manuals/.

### Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

**Note**: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

**Note**: Options printed in **Bold** are default settings.

### How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

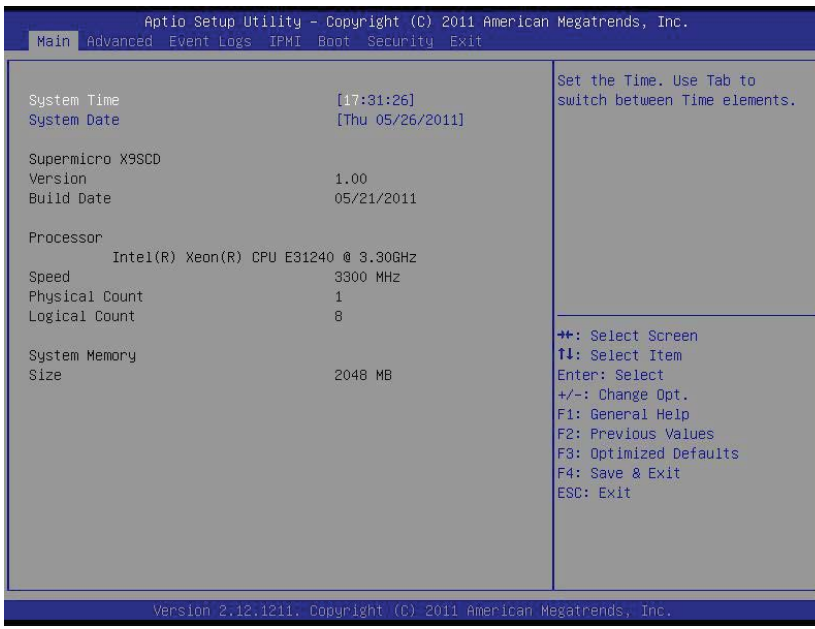
### How to Start the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

**Warning!** Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

## 7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



**System Overview:** The following BIOS information will be displayed:

**System Time/System Date**

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Supermicro X9SCD

Version

Build Date

**Processor**

The AMI BIOS will automatically display the status of processor as shown below:

Processor

Speed

Physical Count

Logical Count

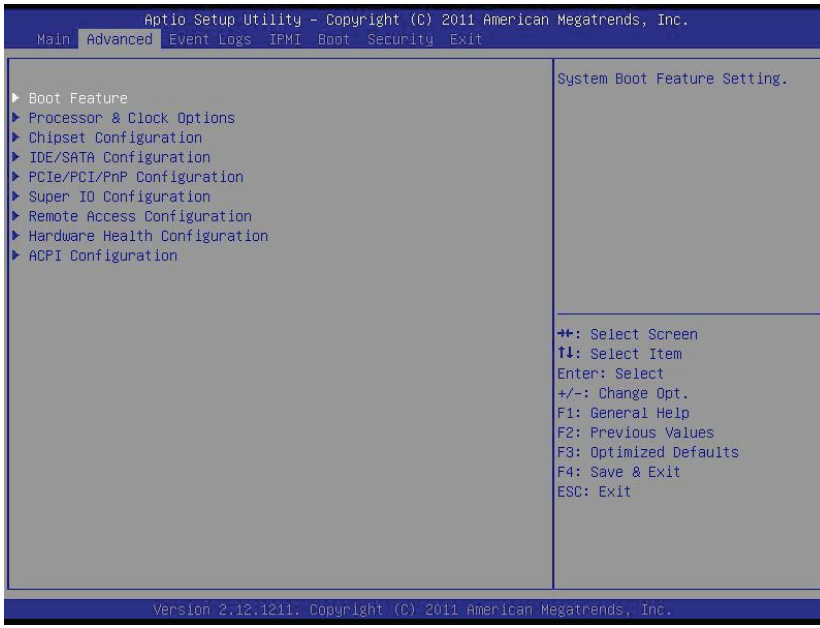
**System Memory**

This displays the size of memory available in the system:

Size

## 7-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:




### ▶BOOT Feature

#### Quiet Boot

This feature allows the user to select the bootup screen display between POST messages and the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

#### AddOn ROM Display Mode

This feature sets the display mode for Option ROM. The options are **Force BIOS** and Keep Current.

#### Bootup Num-Lock

This feature selects the Power-on state for Numlock key. The options are Off and **On**.

**Wait For 'F1' If Error**

Select Enabled to force the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

**Interrupt 19 Capture**

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

**Watch Dog Function**

If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

**Power Button Function**

This feature controls how the system shuts down when the power button is pressed. Select 4-Second Override to force the user to press and hold the Power Button for 4 seconds before the system turns off. Select Instant Off if you want the system to instanty power off when the Power Button is pressed. The options are 4 Second Override and **Instant Off.**

**Restore on AC Power Loss**

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last state before a power loss. The options are Power-On, Power-Off and **Last State**.

## ▶Processor & Clock Options

**Warning**: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or incorrect DRAM timing may cause system to become unstable. When this occurs, revert to the default setting.

**Clock Spread Spectrum**

Select Enabled to allow BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. Select Disabled to enhance system stability. The options are **Disabled** and Enabled.

**Hardware Prefetcher (Available when supported by the CPU)**

If set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and **Enabled**.

**Adjacent Cache Line Prefetch (Available when supported by the CPU)**

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

**Intel® Virtualization Technology (Available when supported by the CPU)**

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled. **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

**Execute-Disable Bit Capability (Available when supported by the OS and the CPU)**

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

**Intel® Hyper Threading Technology**

Set to Enabled to use the processor's Hyper Threading Technology feature. The options are **Enabled** and Disabled.

**Active Processor Cores**

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are **All,** 1, 2 and 3.

**Power Technology**

This feature determines what power-saving scheme the motherboard uses. The options are Disabled, **Energy Efficient** and Custom. If Custom is selected, the following options become available:

**EIST**

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce

power consumption and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are **Disabled** and Enabled.

**P-STATE Coordination**

This feature selects the type of coordination for the P-State of the processor. P-State is a processor operational state that reduces the processor's voltage and frequency. This makes the processor more energy effiicient, resulting in further gains. The options are **HW_ALL**, SW_ALL and SW-ANY.

**CPU C3 Report, CPU C6 Report**

This BIOS feature enables or disables C3 (ACPI C2) or C6 (ACPI C3) reporting to the operating system. The options are **Disabled** and Enabled.

**Package C-State Limit**

If set to Auto, the AMI BIOS will automatically set the limit on the C-State package register. The options are **C0**, C1, C6, C7 and No Limit.

## ▶Turbo Boost Technology (Available if Intel® EIST technology is Enabled)

**Turbo Mode**

This feature allows processor cores to run faster than marked frequency in specific conditions. The options are Disabled and **Enabled.**

**Long duration power limit** - this is the processor power consumption limit (in Watts) during a long duration time window.

**Long duration maintained** - this is the time in milliseconds where the Long Duration Power Limit is maintained.

**Short duration power limit** - During Turbo Mode, the system may exceed the processor's default power setting and exceed the Short Duration Power limit. By increasing this value, the processor can provide better performance for a short duration.

## ▶Chipset Configuration

**WARNING:** Setting the wrong values in the following sections may cause the system to malfunction.

**▶CPU Bridge Configuration**

This item displays the current CPU Revision, Current CPU1 Memory Frequency, Memory Type and Memory Reference Code Revision.

**Memory Frequency**

This feature allows the user to select the memory speed. Under normal conditions, please set this to Auto. The options are **Auto**, Force DDR-800, Force DDR-1067, Force DDR-1333, and Force DDR-1600.

## ▶Integrated I/O Configuration

This item displays the current North Bridge Revision.

**VT-d**

Select Enabled to enable Intel's Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

**Active State Power Management**

Select Enabled to start Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus. This maximizes power-saving and transaction speed. The options are Enabled and **Disabled**.

**PCIE Maximum Payload Size**

This feature selects the setting for the PCIE maximum payload size. The options are **Auto,** 128 Bytes**,** 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes**.**

**PCI Express Port**

This feature enables or disables the PCI Express port. The options are Disabled, Enabled and **Auto.**

**PEG Force Gen1**

This feature forces Gen1 support on the PCI Express Graphics (PEG) port. The options are **Disabled**, and Enabled**.**

**Detect Non-Compliant Device**

This feature enables or disables the detection of a non-compliant device that is attached to the PCI Express Graphics (PEG) port. The options are **Disabled**, and Enabled**.**

## ▶South Bridge Configuration

This item displays the current South Bridge Revision.

**USB Functions**

This feature allows the user to decide the number of onboard USB ports to be enabled. The Options are Disabled and **Enabled**.

**Legacy USB Support (available if USB Functions above is Enabled)**

Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vise versa. The settings are Disabled, Enabled and **Auto**.

**Port 60/64 Emulation (available if USB Functions above is Enabled)**

Select Enabled to activate I/O port 60h/64h emulation support. This must be enabled for complete USB keyboard legacy support for Operating Systems that are not compatible with USB devices. The settings are **Enabled** and Disabled.

**BIOS EHCI Hand-Off (available if USB Functions above is Enabled)**

This item is for Operating Systems that does not support Enhanced Host Controller Interface (EHCI) hand-off. When enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are **Enabled** and Disabled.

## ▶IDE/SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE devices and displays the following items:

**SATA Mode**

This item selects the mode for the installed drives. The options are Disabled, IDE Mode, **AHCI Mode** and RAID Mode.

**IDE Mode**

The following items are displayed when IDE Mode is selected:

**Serial-ATA Controller 0~1**

This feature is used to activate/deactivate the SATA controller, and sets the compatibility mode. The options are Enhanced and **Compatible.** The default of Serial-ATA Controller 1 is **Enhanced**.

**SATA Port0~Port5**

This item displays the information detected on the installed SATA drives on the particular SATA port.

**AHCI Mode**

The following items are displayed when AHCI Mode is selected:

**Aggressive Link Power Management**

This feature Enables or Disables Agressive Link Power Management support for Cougar Point B0 stepping and later. The options are **Enabled** and Disabled.

**SATA Port0~Port5**

This item displays the information detected on the installed SATA drives on the particular SATA port.

**Staggered Spin Up**

Set this item to Enabled for Staggered Spin-up support. The options are Enabled and **Disabled**.

**Hot Plug**

Set this item to Enabled for hot-plugging support. The options are Enabled and **Disabled**.

**RAID Mode**

The following items are displayed when RAID Mode is selected:

**PCH RAID CodeBase**

Select Intel to enable the Intel SATA Host RAID Utility. Select LSI to use the LSI Host RAID Utility. The options are **Intel** and LSI.

**SATA Port0~Port5**

This item displays the information detected on the installed SATA drives on the particular SATA port.

**Hot Plug**

Set this item to Enabled to enable hot-plugging. The options are Enabled and **Disabled**.

## ▶PCIe/PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

**PCI ROM Priority**

In case of multiple Option ROMs (Legacy and EFI-compatible), this feature specifies what ROM to launch. The options are **Legacy ROM** and EFI Compatible ROM.

**PCI Latency Timer**

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248.

## ▶Super IO Device Configuration

**Serial Port 1**

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

**Serial Port 1 Settings**

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1. Select **Auto** to allow the serial port to automatically assign system resources. The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12),. (IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12), (IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12),

## ▶Remote Access Configuration

**COM1 Console Redirection**

Use this feature to enable console redirection for the COM1 port. The options are **Enabled** and Disabled. The default for all ports are Disabled.

### ▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Terminal Type : Select **ANS**I, VT100, VT100+, or VT-UTF8

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

Flow Control: **None** or Hardware RTS/CTS

Recorder Mode: **Disabled** or Enabled

Resolution 100x31: **Disabled** or Enabled

Legacy OS Redirection Resolution: **80x24** or 80x25

**SOL Console Redirection**

Use this feature to enable console redirection for SOL (Serial Over LAN). The options are **Enabled** and Disabled. The default for all ports are Disabled.

## ▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Terminal Type : Select **ANSI**, VT100, VT100+, or VT-UTF8

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

Flow Control: **None** or Hardware RTS/CTS

Recorder Mode: **Disabled** or Enabled

Resolution 100x31: **Disabled** or Enabled

Legacy OS Redirection Resolution: **80x24** or 80x25

**Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS)**

Use this feature to enable console redirection. The options are **Enabled** and Disabled. The default is Disabled.

## ▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Out-of-Band Mgmt Port: **COM1**, SOL

Terminal Type : Select ANSI, VT100, VT100+, or **VT-UTF8**

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

## ▶Hardware Health Configuration

**Fan Speed Control Mode**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Standard" for the onboard fans to run at 50% of the Initial PWM Cycle in order to balance the needs between system cooling and power saving. This setting is recommended for regular systems with normal hardware configurations. Select "Optimal" for the onboard fans to run at 30% of the Initial PWM Cycle for best power efficiency and maximum quietness. The options are Full Speed (@100% of PWM Cycle), **Standard** (@50% of PWM Cycle), and Optimal (@30% of PWM Cycle).

**CPU Temperature, System Temperature**

This feature displays the current temperature of the above monitors.

**Fan1 Speed**

This feature displays the fan speed reading from the Fan 1 interface.

**VCORE, 12V, VDIMM, 5VCC, VCC PCH, AVCC, 3.3VCC, VSB, VBAT**

This feature displays the current voltages of the above voltage monitors.

## ▶ACPI Configuration

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

**High Precision Event Timers**

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruc-

tion embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

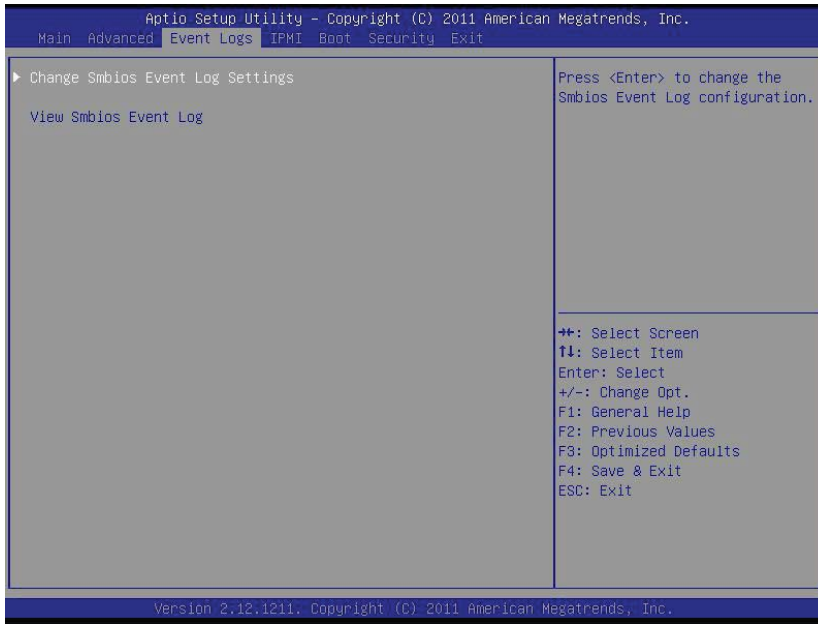
**Suspend Mode**

This setting allows you to configure the ACPI (Advanced Configuration and Power Interface) sleep state for your system when it is in the Suspend mode. The options are Suspend Disabled, S1 (POS), and **S3 (STR)**. S3 (STR) is the deepest sleep state in these options.

**WHEA Support**

This feature Enables the Windows Hardware Error Architecture (WHEA) support for the Windows 2008 operating system (and later versions). The options are **Enabled** and Disabled.

## 7-4 Event Logs




### ▶Change Smbios Event Log Settings

The following options are available:

**Smbios Event Log**

Change this item to enable or disable all features of the Smbios Event Logging during boot. The options are **Enabled** and Disabled.

**Erase Event Log**

This option erases all logged events. The options are **No**, Yes, Next reset and Yes, Every reset.

**When Log is Full**

This option automatically clears the Event Log memory of all messages when it is full. The options are **Do Nothing** and Erase Immediately.

**MECI**

The Multiple Event Count Increment (MECI) counter counts the number of occurences a duplicate event must happen before the MECI counter is incremented. This is a numeric value.

**METW**

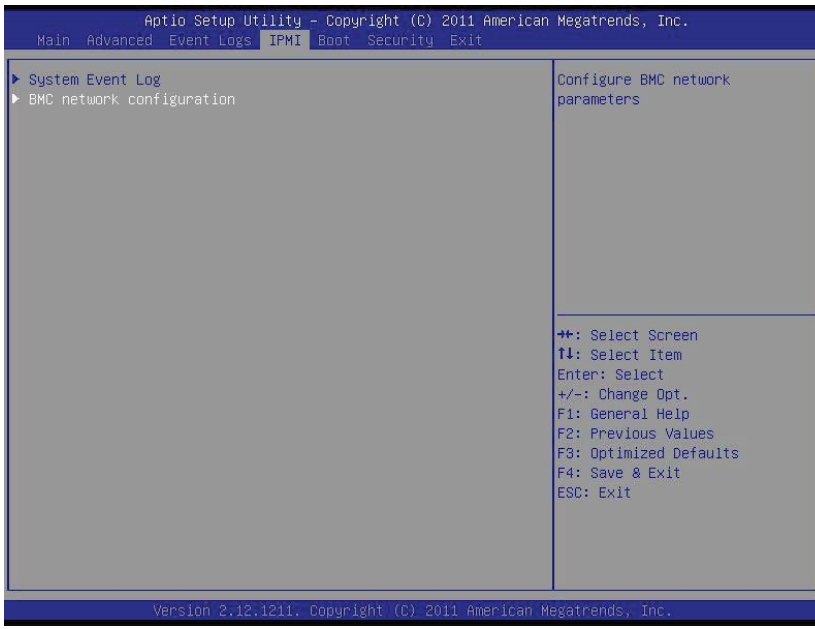
The Multiple Event Time Window (METW) defines number of minutes must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99.

**View Smbios Event Log**

Displays the Smbios Event Log stored in memory.

## 7-5 IPMI Configuration

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that IT administrators can use to monitor system health and to manage the system as a whole. For more information on the IPMI specifications, please visit Intel's website at www.intel.com.




### ▸System Event Log

This feature is used to change the Sytem Event Log (SEL) configuration.

**SEL Components** - Change this item to enable or disable all features of System Event Logging. The options are Enabled and Disabled. When Enabled, the following can be configured:

**Erase SEL** - This option erases all logged SEL events. The options are No, Yes, On Next reset and Yes, On Every reset.

**When SEL Full**

This option automatically clears the System Event Log memory of all messages when it is full. The options are **Do Nothing** and Erase Immediately.

## ▸BMC Network Configuration

Set this feature to configure the IPMI LAN adapter with a network address.

**Update IPMI LAN Configuration**

Select Yes to update the IPMI LAN configuration. The options are Yes and **No**.

**Configuration Source**

This feature selects whether the IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server (Dynamic Host and Configuration Protocol) "Dynamic" or manually entered by the user "Static". If Static is selected, the IP Address, Subnet Mask and Gateway Address must be manually entered below. The options are Static, Dynamic and **Do Nothing**. The following items are displayed when Static is selected:

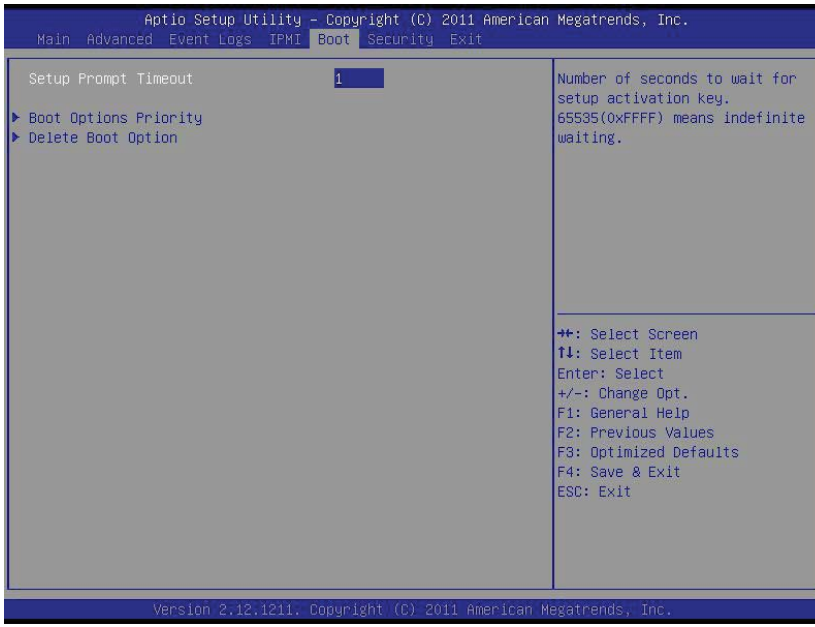
**Station IP Address** - Enter the IP address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255.

**Subnet Mask** - Subnet masks tell the network which subnet this machine belongs to. The value of each three-digit number separated by dots should not exceed 255.

**Station MAC Address** - MAC addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots (i.e., 00.30.48.D0.D4.60).

**Gateway IP Address** - Enter the Gateway or Router address this machine will use (i.e., 192.168.10.1).

## 7-6 Boot Settings




Use this feature to configure Boot Settings:

### ▶Boot Options Priority

This feature allows the user to specify which devices are boot devices and the order of priority from which the systems boots from during startup.

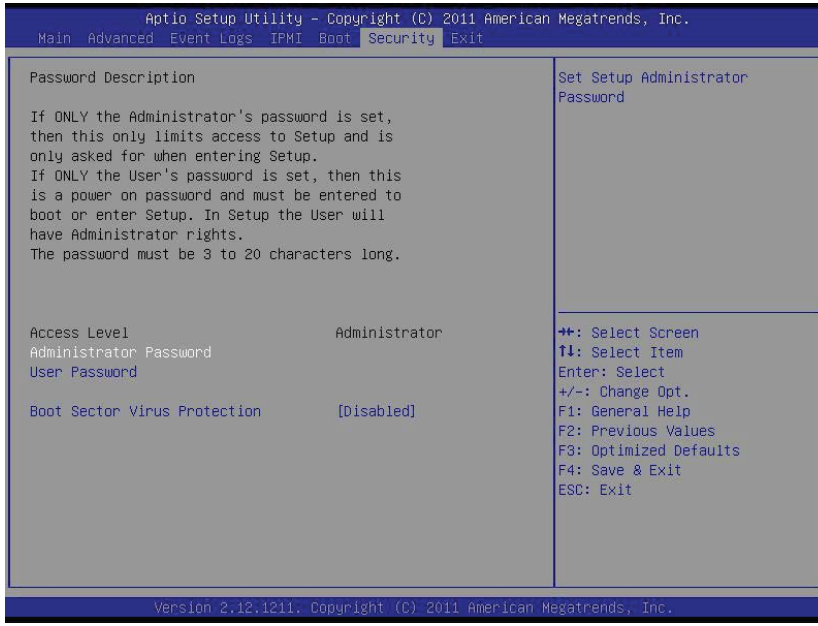
**Boot Option #1, Boot option #2, Boot Option #3, etc**

The settings are **Built-in EFI Shell**, [any detected boot device] and Disabled.

### ▶Delete Boot Option

This feature allows the user to delete any previously-defined boot device from the Boot Options Priority.

## 7-7 Security Settings




- If the Administrator password is defined ONLY - this controls access to the BIOS setup ONLY.
- If the User's password is defined ONLY - this password will need to be entered during each system startup or boot, and will also have Administrator rights in the setup.
- Passwords must be at least 3 and up to 20 characters long.

**Administrator Password**

Press Enter to create a new, or change an existing Administrator password.

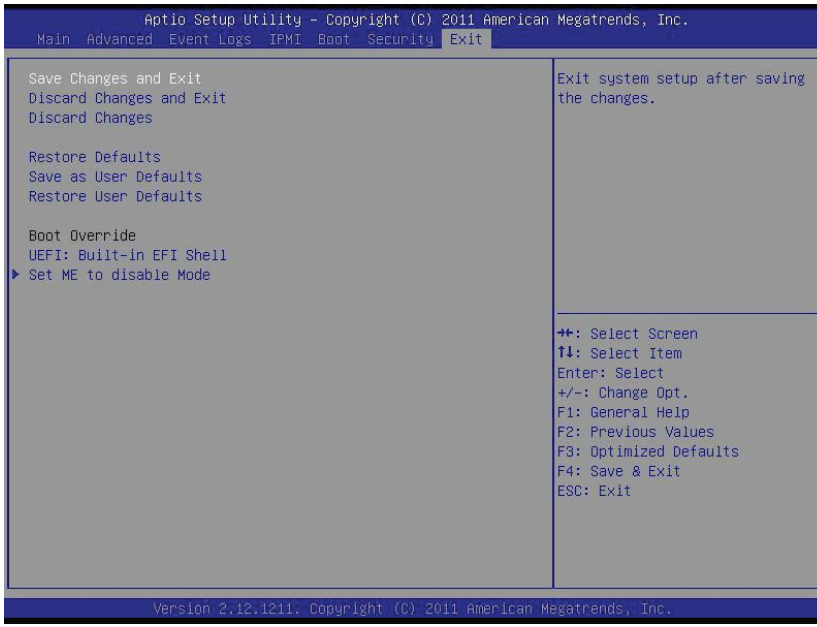
**User Password:**

Press Enter to create a new, or change an existing User password.

**Boot Sector Virus Protection**

When this item is Enabled, the BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

## 7-8 Exit Options




Select the Exit tab from the BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

**Save Changes and Exit**

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so that the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

**Discard Changes and Exit**

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

**Discard Changes**

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

**Restore Defaults**

To set this feature, select Restore Defaults from the Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.

**Save As User Defaults**

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use

**Restore User Defaults**

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

**Boot Override**

Set this feature to override a previously defined boot device. The available devices will be listed below.

## Notes

# Appendix A

# POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the AMI BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

## Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with the front panel Overheat LED on - system overheat

8 short beeps - display memory read/write error

| BIOS Error Beep Codes | | |
|---|---|---|
| **Beep Code/LED** | **Error Message** | **Description** |
| 1 beep | Refresh | Ready to boot |
| 5 short beeps + 1 long beep | Memory error | No memory detected in the system |
| 5 beeps | No Con-In or No Con-Out devices | Con-In: USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL<br><br>Con-Out: Video Controller, PCI or Serial Console Redirection, IPMI SOL |
| | | |
| **X9 IPMI Error Codes** | | |
| 1 Continuous Beep | System OH | System Overheat |

# Notes

# Appendix B

# System Specifications

### Processors

Each node supports one Intel E3-1200 v2 Series processor in an LGA 1155 socket

**Note: Please refer to our web site for a complete listing of supported processors.**

### Chipset

Intel C204 PCH

### BIOS

64 Mb AMIBIOS® SM Flash BIOS

### Memory Capacity

Each node supports up to 32 GB of ECC DDR3-1333/1600 UDIMM memory (Total of 256 GB for the system)

**Note: See the memory section in Chapter 5 for details.**

### Drive Bays

Sixteen hot-swap drive bays to house 3.5" SAS/SATA drives

### Expansion Slots

Each node supports the use of one PCI-E 3.0 x8 low-profile add-on card (6.6" maximum length)

### Motherboard

X9SCD+-HF (proprietary form factor)
Dimensions: 4.75" x 15.95" (120.7 x 405 mm)

### Chassis

SC938H-R1620B (3U rackmount)
Dimensions: (WxHxD) 17.26 x 5.21 x 23.2 in. (438 x 132 x 589 mm)

### Weight

Gross (Bare Bone): 62.2 lbs. (28.3 kg)

### System Cooling

Four 8-cm system fans

### System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range

Rated Input Current: 11.5 - 5.5A max

Rated Input Frequency: 50 to 60 Hz

### Power Supply

Rated Output Power: 1620W (Part# PWS-1K62P-1R) 80 Plus Bronze Certified

Rated Output Voltages: +12V (84A @ 100-120VAC, 100A @ 120-140VAC, 135A @ 180-264VAC), +5Vsb (4A)

### Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 20% to 95% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

### Regulatory Compliance

Electromagnetic Emissions:
FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity:
EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:
EN 60950/IEC 60950-Compliant
UL Listed (USA)
CUL Listed (Canada)
TUV Certified (Germany)
CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

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